Claims

1. An isolated nematode persistently infected with an isolated pathogen.

2. The nematode of claim 1, wherein said pathogen expresses a detectable marker.

3. The nematode of claim 1, wherein said nematode is *Caenorhabditis elegans*.

4. The nematode of claim 1, wherein said nematode is a one-day old adult hermaphrodite or an L4 larval stage worm.

5. The nematode of claim 1, wherein said pathogen colonizes the intestine of said nematode.

6. The nematode of claim 1, wherein said pathogen is *Salmonella*.

7. The nematode of claim 6, wherein said pathogen is *Salmonellae typhimurium* strain SL1344.

8. A method of screening for a virulence factor that enables a pathogen to develop a persistent infection in a nematode, comprising the steps of:

(a) exposing a nematode to a mutagenized pathogen;

(b) determining whether said mutant pathogen persistently infects said nematode, a reduction of disease in said nematode relative to that caused by the non-mutagenized pathogen indicating a mutation in a virulence factor that enables said pathogen to develop a persistent infection in said nematode; and

(c) using said mutation as a marker for identifying said virulence factor.

9. The method of claim 8, wherein said pathogen expresses a detectable marker.

10. The method of claim 8, wherein said nematode is a one-day old adult hermaphrodite or an L4 larval stage worm.

11. The method of claim 8, wherein said pathogen colonizes the intestine of said nematode.

12. The method of claim 8, wherein said pathogen is *Salmonella*.

13. The method of claim 12, wherein said pathogen is *Salmonella typhimurium* strain SL1344.

14. The method of claim 8, wherein said nematode is *C. elegans*.

15. The method of claim 8, wherein said method utilizes a salmonellae/*C. elegans* killing assay.

16. The method of claim 15, wherein said mutated pathogen causes less *C. elegans* killing than the non-mutagenized pathogen.

17. A method of screening for a compound that inhibits a persistent pathogenic infection in a nematode, comprising the steps of:

(a) providing a nematode persistently infected with a pathogen;

(b) contacting said persistently infected nematode with a test compound; and

(c) determining whether the test compound inhibits the pathogenicity of said pathogen in said persistently infected nematode.

18. The method of claim 17, wherein said pathogen expresses a detectable gene.

19. The nematode of claim 17, wherein said nematode is a one-day old adult hermaphrodite or an L4 larval stage worm.

20. The nematode of claim 17, wherein colonization of the intestine of said nematode by said mutated pathogen is decreased.

21. The method of claim 17, wherein said pathogen is *Salmonella*.

22. The method of claim 21, wherein said pathogen is *Salmonella typhimurium* strain SL1344.

23. The method of claim 17, wherein said nematode is *C. elegans*.

24. The method of claim 17, wherein said test compound is provided in a compound library.

25. The method of claim 17, wherein said test compound is a small organic compound.

26. The method of claim 17, wherein said test compound is a peptide, peptidomimetic, or an antibody or fragment thereof.

27. The method of claim 17, wherein said inhibition of pathogenicity is measured by a salmonellae/*C. elegans* killing assay.

28. The method of claim 27, wherein said pathogen causes less *C. elegans* killing in the presence of said test compound than in the absence of said test compound.

29. A method of screening for a virulence factor that enables a pathogen to develop a persistent infection in a nematode, comprising the steps of:

(a) exposing a nematode to a mutagenized pathogen expressing a detectable marker;

(b) determining whether said mutant pathogen persistently infects said nematode by measuring the level of detectable marker in said nematode, where a decrease of the marker in said nematode relative to that caused by the non-mutagenized pathogen indicates a mutation in a virulence factor that enables said pathogen to develop a persistent infection in said nematode; and

(c) using said mutation as a marker for identifying said virulence factor.

30. A method of screening for a compound that inhibits a persistent pathogenic infection in a nematode, comprising the steps of:

(a) providing a nematode persistently infected with a pathogen expressing a detectable marker;

(b) contacting said persistently infected nematode with a test compound; and

(c) determining whether said pathogen persistently infects said nematode by measuring the level of detectable marker in said nematode, where a decrease of the marker in said nematode indicates that said test compound inhibits a persistent pathogenic infection in the nematode.

31. A method of screening for a virulence factor that enables a pathogen to develop a persistent infection in a nematode, said method comprising:

(a) exposing a nematode to a pathogen expressing a gene not normally expressed

by said pathogen;

(b) determining whether said pathogen persistently infects said nematode by measuring the level of detectable marker in said nematode, where a decrease or increase of the marker in the nematode relative to that caused by the non-mutagenized pathogen indicates a mutation in a virulence factor or a virulence factor gene that enables the pathogen to develop a persistent infection in the nematode; and

(c) using gene expressed by said pathogen as a marker for identifying saidvirulence factor.

32. method of claim 31, wherein said screen utilizes a salmonellae/*C. elegans* killing assay.

33. The method of claim 31, wherein said pathogen has a reduced or enhanced capacity to develop a persistent infection in *C. elegans*.

34. A method of screening for a virulence factor that enables a pathogen to develop a persistent infection in a nematode, said method comprising:

(a) exposing a nematode to a pathogen, wherein said pathogen overexpresses a pathogen gene ;

(b) determining whether the pathogen persistently infects the nematode by measuring the level of detectable marker in the nematode, where a decrease or increase of the marker in the nematode relative to that caused by the non-mutagenized pathogen indicates a mutation in a virulence factor or a virulence factor gene that enables the pathogen to develop a persistent infection in the nematode; and

(c) using the mutation or virulence factor gene as a marker for identifying the virulence factor.

35. The method of claim 34, wherein said screen utilizes a salmonellae/C. elegans killing assay.

36. The method of claim 34, wherein said pathogen has a reduced or enhanced capacity to develop a persistent infection in C. elegans.

37. A method of screening for a virulence factor that enables a pathogen to develop a persistent infection in a nematode, comprising:

(a) exposing a nematode to a pathogen expressing a detectable marker, the pathogen being mutagenized;

(b) determining whether the mutant or otherwise altered pathogen persistently infects the nematode by measuring the level of detectable marker in the nematode, where a decrease or increase of the marker in the nematode relative to that caused by the non-mutagenized pathogen indicates a mutation in a virulence factor or a virulence factor gene that enables the pathogen to develop a persistent infection in the nematode; and

(c) using the mutation for identifying the virulence factor.

38. A method of screening for a virulence factor that enables a pathogen to develop a persistent infection in a nematode, comprising:

(a) exposing a nematode to a pathogen expressing a detectable marker, the pathogen expressing a gene not normally expressed by the pathogen;

(b) determining whether the mutant or otherwise altered pathogen persistently infects the nematode by measuring the level of detectable marker in the nematode, where a decrease or increase of the marker in the nematode relative to that caused by the non-mutagenized pathogen indicates a mutation in a virulence factor or a virulence factor gene that enables the pathogen to develop a persistent infection in the nematode; and

(c) using the gene expressed by said pathogen as a marker for identifying the

virulence factor.

39. A method of screening for a virulence factor that enables a pathogen to develop a persistent infection in a nematode, comprising:

(a) exposing a nematode to a pathogen expressing a detectable marker, the pathogen overexpressing a pathogen gene;

(b) determining whether the mutant or otherwise altered pathogen persistently infects the nematode by measuring the level of detectable marker in the nematode, where a decrease or increase of the marker in the nematode relative to that caused by the non-mutagenized pathogen indicates a mutation in a virulence factor or a virulence factor gene that enables the pathogen to develop a persistent infection in the nematode; and

(c) using the gene expressed by said pathogen as a marker for identifying the virulence factor.